NATIONAL WEATHER SERVICE, LAS VEGAS NEVADA

The Desert Sun

SKYWARN Spotter Newsletter

Fall/Winter 2012/13

In This Issue

This newsletter serves the following counties:

Nevada: Clark, Lincoln, Nye, Esmeralda

Arizona: Mohave

California: Inyo, San Bernardino

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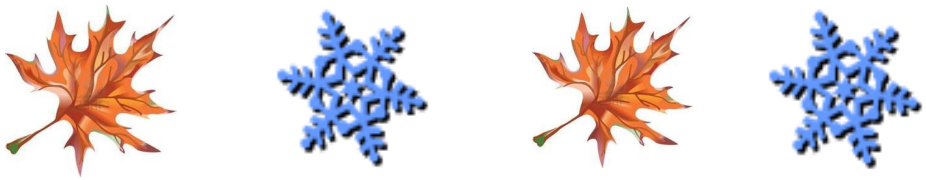
Spotter News

Hopefully everyone had a great summer and it was certainly one to remember when it comes to the weather. This was one of the most active Monsoon seasons we have seen in recent years and it certainly kept us on our toes. I would like to thank all the spotter who were able to call in reports and send pictures. These were a great help to us and it really made a difference with some of our warnings and verification. We will be gearing up for a new round of spotter classes early next Spring and I will be compiling a list of spotter training dates and locations. I should have an initial list out by February.

Personnel Changes at the NWS Las Vegas

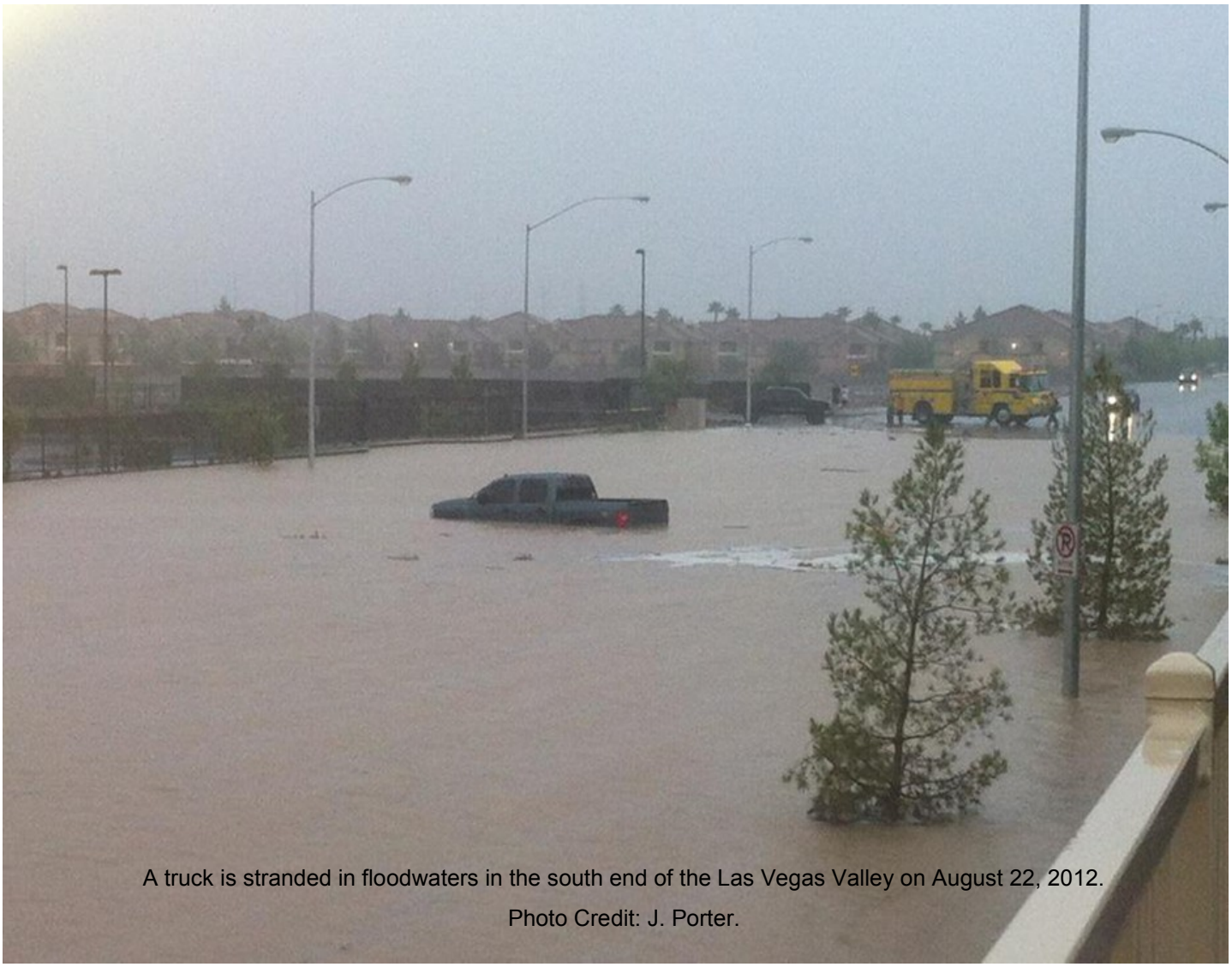
Over the past several months we have seen some significant personnel changes here at your local NWS Las Vegas office. We have two new Meteorologist Interns, Ryan Metzger and Chris Stumpf. Ryan comes to us from Glasgow, MT and Chris arrived from Monterey, CA. Both were SCEP students which means they worked part time for a NWS office while still attending school. Our new General Forecast Reid Wolcott arrived in August from Riverton, WY where he was an meteorologist intern. Faith Borden (Warning Coordination Meteorologist) has recently moved to Charleston, WV and our current Meteorologist in Charge, Mike Staudenmaier will be moving to Salt Lake City in November. They will be replaced by Dan Berc (WCM) from Riverton, WY and Todd Lericos (MIC) from Tallahassee, FL and will be arriving in November.



- **If you are in a SAFE location and have a chance to shoot video/ pictures, please share it with us for inclusion in future presentations/newsletters.**
- **Also, please DO NOT assume that we know what is happening at your location. If you think its important please relay the information to us. We enjoy hearing from everyone, especially during severe weather.**

2012 Monsoon Season Wrap-Up

Chris Stachelski - NWS Forecaster



A truck is stranded in floodwaters in the south end of the Las Vegas Valley on August 22, 2012.

Photo Credit: J. Porter.

After an exceptionally dry winter that resulted in widespread severe drought conditions developing across the Mojave Desert and southern Great Basin, the 2012 North American Monsoon Season finally brought much needed precipitation to the area. Overall the season produced above normal totals. In some locations, more precipitation fell during this monsoon season than normally falls in a given year. One clear sign of just how active this monsoon season was the number of Flash Flood Warnings issued by the National Weather Service Office in Las Vegas. A total of 212 Flash Flood Warnings were issued in July, August and September for the area served by the NWS Office in Las Vegas. In the Mojave Desert and southern Great Basin, the North American Monsoon Season marks the season where precipitation across the area is associated with pushes of moisture into the region from the south. This typically results in showers and thunderstorms developing across the area most often during the afternoon and evening hours. Precipitation associated with the monsoon accounts for roughly one quarter to one third of the normal annual precipitation in this area with the percentage being greatest over the Mojave Desert and lower over the southern Great Basin. In Arizona, the monsoon season is defined as the period from June 15th through September 30th. Hence, for simplistic purposes the same period was used for southern Nevada and southeast California.

The 2012 monsoon season took until early July to get going, with the first push of moisture of the season arriving in time for the 4th of July. Although drier air returned by the 5th, it was not long until moisture returned. By July 11th into July 12th, a southeast flow set up allowing another push of moisture into the area. This push of moisture lasted until July 16th when a deep trough in the mid and upper levels of the atmosphere moved in from the Pacific and swept the moisture out of the area. The stretch from July 11th through July 16th turned out to be one of the most active periods of the entire monsoon season.

As is typically the case with the monsoon in the early portions of the season, the amount of moisture present was limited and resulted initially in dry thunderstorms developing on July 11th. A total of 13 wildfires were started in northern Mohave County on the afternoon hours of that day. In addition, two wildfires were started near Pahrump. The following day, thunderstorms triggered an outflow boundary in the late afternoon and evening hours that moved west across Mohave County and eventually into Clark County. One person was injured in Meadview when he was knocked down a flight of stairs outside his home and hit his head. In Las Vegas the outflow boundary arrived with dust that plunged visibility as low as 2 miles. On July 13th an influx of deeper moisture arrived in the area. One thunderstorm triggered extensive flash flooding in Lake Havasu City. This storm claimed one life and caused an estimated 5 million dollars in damages. Based on damage estimates, this ranks as the costliest flash flood in Lake Havasu City since August 12, 1982 when a storm triggered flash flooding that resulted in an estimated damages of 2.5 million dollars (in 1982 dollars). In addition, major flash flooding took place along Highway 62 in California east of Twentynine Palms on July 13th and again on July 14th washing out large sections of the road.

Damage to State Route 62 east of Twentynine Palms.

Photo Credit: Spotter.

On the evening of July 14th, a thunderstorm moved across the northwest portion of the Las Vegas Valley producing very heavy rain that resulted in flash flooding. One swiftwater rescue was performed. However, this event was followed the next day by another thunderstorm that moved northeast across the western half of the Las Vegas Valley. Late on the evening of July 15th, a thunderstorm produced hail up to 1.25 inches in diameter from Summerlin to North Las Vegas as well as winds up to 60 mph and heavy rain. Both of these storms resulted in July being the wettest month of the 2012 monsoon season in the northwest part of the Las Vegas Valley. The thunderstorm of July 15th in the Las Vegas Valley did not produce the largest hail ever documented in the Las Vegas Valley. However according to a local auto body shop, ten thousand insurance claims were filed for hail damage to vehicles. Based on this, preliminary damage estimates for this storm are placed at 50 million dollars. A look through weather records shows that no other meteorological event in Las Vegas has ever produced hail damage of this magnitude with respect to the number of vehicles damaged as well as the dollar cost. The cost of damages with this event ranks it as the costliest hail storm ever in Las Vegas as well as the costliest weather event in general in Las Vegas since the Hilton sign thunderstorm event of July 18, 1994. Adjusted for inflation, the Hilton sign thunderstorm event today would have produced about 72.5 million dollars in damages. The Hilton sign thunderstorm event still ranks as the costliest weather event with respect to thunderstorm winds ever in Las Vegas (in 1994 dollars damages with that event were estimated at 50 million). Several reasons for the magnitude of hail damage with this storm exist - it impacted a large area of the Las Vegas Valley and fell for several minutes. In past cases, hail of one inch or more in diameter in the Las Vegas Valley has usually fallen in a much smaller area. Monsoon moisture returned to the area from July 19th through July 23rd. The afternoon of July 23rd was particularly active in Lincoln County. A tornado was reported by a BLM Wilderness Ranger about 3 miles southwest of Crestline and was rated an EF0. This was the first tornado confirmed in Lincoln County since August 31, 2000. Later that afternoon, a thunderstorm produced an 84 mph wind gust was measured in Rachel along with a wall of blowing dust. Although the area dried out for a few days, moisture pushed back into the area on July 29th. Late on the evening of July 31st, a thunderstorm pushed south across Trona damaging the roofs on several homes as well as downing several trees and power poles.

A large tree blown down in Bullhead City by the wind on August 9th.
Photo Credit: Spotter.

The monsoon moisture that arrived in the area during the closing days of July never really left in August as the flow aloft in the mid and upper levels of the atmosphere essentially trapped it and allowed it to be recycled through the month. This resulted in August being the wettest month of the 2012 monsoon season in most areas. The evening of August 3rd was active in southern Nye County and southeast Inyo County, when thunderstorms took down branches in Beatty and flooded roads in and near Pahrump and in Death Valley National Park. On the evening of August 9th, a large outflow boundary moved across Mohave County toward southern Clark and eastern San Bernardino County triggering a haboob that impacted Bullhead City, Mohave Valley and Laughlin. Winds gusted up to 69 mph and visibility dropped to zero due to the dust. Numerous power poles, power lines and trees were downed and roofs were taken off several mobile homes in Bullhead City. One home was damaged by a fallen tree and another damaged a car. Several tents collapsed in a community park. In Laughlin, 8 people were injured at a casino when a window facing the Colorado River was blown in and sent glass flying. Another very active stretch of the monsoon season was from August 18th through August 22nd. On August 20th, a thunderstorm produced hail up to 1.25 inches in diameter and winds gusts to 70 mph near Valentine in Mohave County. On August 22nd, thunderstorms produced the second wettest calendar day on record in Las Vegas at McCarran International Airport. This resulted in flash flooding that killed one person and caused an estimated 5 million in damages. That same day at least two people were injured near Laughlin due a vehicle accident after a driver lost control on a wet road.

As September arrived, moisture stayed around resulting in more showers and thunderstorms mainly from the 4th through the 12th. On the evening of September 4th, a thunderstorm produced winds estimated at 80 mph in Needles and Mohave Valley. The roof of a historic Needles movie theater was damaged and one person was injured in Mohave Valley due to flying debris. Several power poles and trees were taken down and the window of a business was blown out. On September 10th, thunderstorms produced small hail on Mt. Charleston that covered the ground with several inches and plunged the temperature in mid-afternoon to 37 degrees in Lee Canyon. The grand finale of the monsoon season came on September 11th when heavy rain producing thunderstorms moved across the Las Vegas Valley during the afternoon hours. One man was killed and numerous homes, businesses and roads were flooded. This resulted in the wettest calendar day and 24 hour period ever for the month of September in Las Vegas. Preliminary damage estimates for the September 11th heavy rain and flash flood event have been put at 75 million dollars. This would rank this as the costliest flash flood ever in Las Vegas, not accounting for inflation. By comparison, the July 8, 1999 flash flood caused an estimated 25 million dollars in damage in 1999 dollars. Adjusted to today's dollars for inflation that would amount to nearly 32.5 million dollars in damages. Early on September 12th, lightning struck and injured two marines at the Twentynine Palms Marine Corps Air Base. A strong trough in the mid and upper levels moved across the region finally sweeping away the moisture that was in place and bringing an end to the 2012 Monsoon Season by the close of September 12th.

Hail covers the ground on Mt. Charleston on September 10th.
Photo Credit: Las Vegas Ski & Snowboard Resort.

The 2012 Monsoon Season ranks as the 3rd wettest monsoon season ever in Las Vegas. The wettest monsoon season ever was back in 1984. Ironically, both 1984 and 2012 rank as one of the driest January through June periods ever in Las Vegas with totals of 0.29 inch and 0.25 inch recorded respectively in each of those 6 month periods. The active monsoon season in 2012 can also be seen by the number of days in which thunder was reported at McCarran International Airport for the June through September period. The total for 2012 was 20 days which tied for the 3rd highest on record for this period dating back to 1937. In Mesquite, the June 15th through September 30th period produced 5.24 inches of precipitation, which made this the wettest such period on record dating back to 1942. The previous record for Mesquite for this period was 4.06 inches in 1998.

Storm Spotter Photo Page

I would like to thank all the Spotters who sent in pictures over the past few months. Please make sure to include permission for us to use them. Thanks again for all your efforts and we enjoy receiving your photos.

Lenticulars over the Vegas Strip - Photo: Chris Stahelski

Monsoon Thunderstorm - Photo: Theresa Langlois

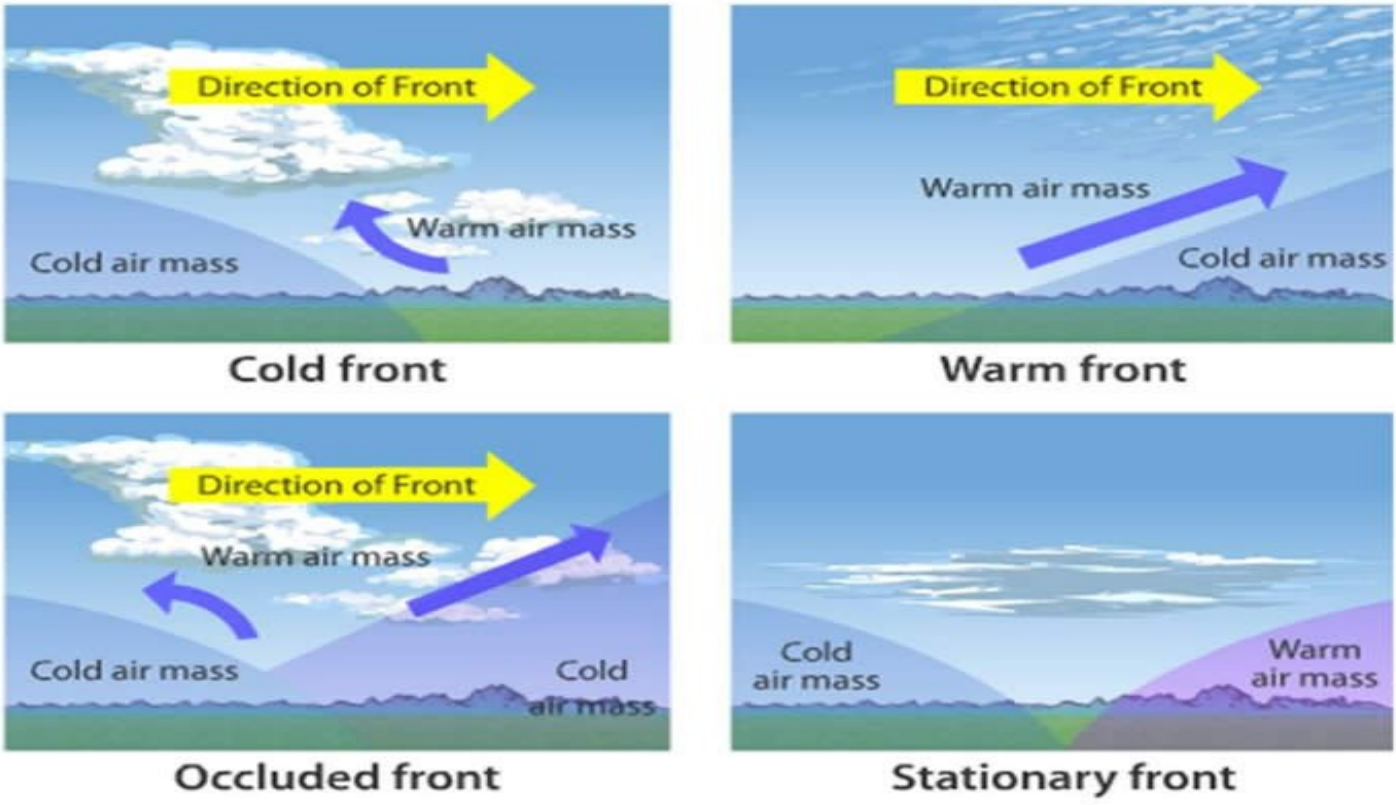
Mammatus Clouds - Photo: James Heslep

Desert Thunderstorm - Photo: Will Wilkens

Keep Track Of The Weather With CoCoRaHS

Are you curious as to how much rain or snow fell each time a storm moves through the area? Do you have a rain gauge you frequently check for rain? If so, the National Weather Service in Las Vegas would like to encourage you to join CoCoRaHS, known as the Community Collaborative Rain, Hail and Snow Network. This network allows you to report online how much rain or snow you may have received or even if you saw any hail. Additional comments on the weather in your area that day such as strong winds or storm reports such as flooding can also be submitted. Not only is this information useful to forecasters for verifying forecasts and warnings, but CoCoRaHS also keeps an online record of your reports. This data can then be sorted to compile totals for a given site or see how frequently you received rain or snow in a given time frame. All you have to do to join is visit http://www.cocorahs.org/ and click on "Join CoCoRaHS" on the left sidebar menu and fill out a short form. While we welcome new observers in all of our communities, our office is especially interested in observers in Mt. Charleston, the Laughlin-Bullhead City area, Searchlight, Beatty, anywhere in Esmeralda County, Lincoln County, the Kingman/central Mohave County area and the Owens Valley. Please contact Chris.Stachelski@noaa.gov or Andy.Gorelow@noaa.gov with any questions.

What are Fronts?



Weather Word Search

W I A W X T I R E T E M O M E N A L X B F V S A X

A U T U M N C B J E T S T R E A M B L R K L V D C

N Y B E F E N I P B P Q M X D S P W E A I S P V V

O K H X A Z P X R L S T U E G H L E W A U Q N I G

W Z G P R E C E E R E B N V U S Z R R U R C L S T

K I G F A Z H R Q Y U S C A F I W T N F F D C O N

K L N P E J J C A T E S O T N G N E B O I I Z R M

O Y Q D S X C N N F A F N G S O N E K B L Q M Y R

E Y R F C T L T O A J X R M C O L L F Y X X B E D

R S K X R H G G G J L A Q G P S R S U I U Z R Z E

R X G O Q N I Z O A I A C X X Q P F Q H Y G D R J

N V U J I F R L G N S S V A S X A J D P K B T Y C

Z G H N T M O R L P P T R A S E I R R U L F R O Z

H C R L D B I V M S T M Y E H C I X C W P P S Y R

S A U V D V D D F M A U P W W Y O Z X T S B A I I

W J F V Y O R R V O O S W O A O U A X Z M R B G S

L Q V O D A R B P G V U W W E T H J M S D I N N C

M T V O K Q Q Z N I W T R Q P N G S D V T A O K L

X F R U P R V L S G P A S M L O R E T N I W X O U

B R K A C F D K P P O R P X H R Z J Z F Z C R O S

W E Y L I J G Z Y H O T Z I D F E W R H F J O R J

L E B M D N Q C R D G S V E T D B N U C Y O Y B F

R Z A S Q L W A K C H T M N G L K F N X V D I B V

A E K Z X G J I P K J E T B N O T D U S X L S R F

J V B B Y Z F E W A T C H H X C Q J M P J I O T X

Weather Word Search - The Words

ADVISORY	CONTRAILS	JET STREAM	TROUGH
ANEMOMETER	DENSE FOG	RAIN	VIRGA
AUTUMN	FLURRIES	SHOWERS	WARNING
AVALANCHE	FREEZE	SLEET	WATCH
CIRRUS	FREEZING RAIN	SNOW	WIND CHILL
COLD FRONT	FROST	STRATUS	WINTER

What Type of Information to Report…Winter Weather

Winter is just around the corner! Although snow rarely falls in most valley locations in the Great Basin and Mojave Desert, the surrounding mountains can receive significant amounts of snow. Here is a reminder of the type of information to report to our office.

- **Snow** – Accumulating 1" or more per hour or any depth on desert floors. If your elevation is under 4000 feet and it is snowing, we would like to know about it.
- **Icing** – Road surfaces that have become ice covered caused by anything. Any icing of trees/shrubs.
- **Fog** – Any visibility caused by fog that is less than 1/2 mile.
- **Wind** - Any measured or estimated winds over 40 mph…especially if its causing travel or visibility problems. Any damage or injuries caused by the wind.

El Niño Could Be A Factor This Winter

Chris Stachelski

Simply stated, El Niño is a large scale ocean-atmospheric phenomenon linked to a pattern of warming in the waters of the central and eastern Pacific near the equator. The strength of an El Niño is based on how warm the waters get in the quasi-equatorial central and eastern Pacific. The strength of an El Niño is important, because it can often give a clue to what the possible impacts on the global weather patterns may be. The El Niño expected for this winter is considered "weak". So what does that mean for our area? Well, many people have come to correlate El Niño with a wet winter in our area. While this is true for strong and most moderate El Niño events, this is not the case in the vast majority of weak events. Looking back through the records for Las Vegas, half of the weak El Niño events have resulted in drier than normal winters. In fact, two of the ten driest November through April time periods ever on record in Las Vegas were during El Niño episodes – these being 2006-2007 when only 0.42 inch fell at McCarran International Airport and 1976-1977 when 0.55 inch fell. Given the wide range in variability with respect to precipitation for this upcoming winter, the current winter outlook for precipitation for our area from the Climate Prediction Center calls for an equal chance for precipitation to be above normal, near normal or below normal.


WANTED!
SPOTTER REPORTS
What to Report:
☑ TORNADO - Circulation in contact with the ground.
☑ FUNNEL CLOUD - Circulation NOT in contact with the ground.
☑ WIND - Causing damage (such as broken tree limbs or power lines) or greater than 40 MPH.
☑ HAIL – Any size. Remember to specify the largest stone.
☑ THUNDERSTORMS - With high winds and frequent cloud to ground lightning.
☑ RAINFALL – 1/4 of an inch or more per 1/2 hour, or any cumulative total over 1/2 inch.
☑ FLOODING - of ANY kind! Is the water rising or falling? Flowing or standing?
☑ VISIBILITY - Under 1/2 mile, caused by anything.
☑ SNOWFALL - Accumulating one inch or more per hour, or any depth on desert floors. What is your elevation?
☑ ICING - on road surfaces caused by anything.
FACEBOOK:
HTTP://WWW.FACEBOOK.COM/US.NATIONALWEATHERSERVICE.LASVEGAS.GOV
TWITTER: #NWSVEGAS.
REWARD
studentposters.co.uk